AF/2856

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

APPEAL BRIEF TRANSMITTAL	Docket Number: **10191/2310**	Conf. No. **7377**

Application Number	Filing Date	Examiner	Art Unit
10/098,650	**March 15, 2002**	**Jay L. POLITZER**	**2856**

Invention Title	Inventor
MEASURING SYSTEM FOR A VISCOSITY MEASUREMENT OF LIQUIDS	**Bernhard JAKOBY et al.**

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Date: 1/6, 2004 Reg. No. 36,197

Signature: _____
Jong H. Lee

Further to the Notice of Appeal dated October 6, 2003 (filed at the PTO on October 8, 2003) in the above-referenced application, enclosed are three copies of an Appeal Brief. Accompanying the Appeal Brief is the Appendix to the Appeal Brief.

The Commissioner is hereby authorized to charge payment of the 37 C.F.R. § 1.17(c) appeal brief filing fee of **$330.00**, a one-month extension fee of **$110.00**, and any additional fees associated with this communication to the deposit account of **Kenyon & Kenyon**, deposit account number **11-0600**.

Dated: 1/6, 2004

By: _____
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(R. No 36,197)

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[10191/2310]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants	:	Bernhard JAKOBY et al.
Serial No.	:	10/098,650
Filing Date	:	March 15, 2002
For	:	MEASURING SYSTEM FOR A VISCOSITY MEASUREMENT OF LIQUIDS
Examiner	:	Jay L. POLITZER
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APPENDIX TO APPELLANTS' APPEAL BRIEF
UNDER 37 C.F.R. § 1.192

S I R :

The claims involved in this appeal, claims 1-7, 9-11, and 13-19, in their current form after entry of all amendments presented during the course of prosecution, are set forth below:

APPEALED CLAIMS:

1. A system for measuring a property of a liquid, comprising:

an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet,

Germany, are the real parties in interest.

II. RELATED APPEALS AND INTERFERENCES

No appeal or interference which will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal is known to exist to the undersigned attorney or is believed by the undersigned attorney to be known to exist to Applicants.

III. STATUS OF CLAIMS

Claims 1-7, 9-11, and 13-19 are pending in this application. Applicants appealed from the final rejection of claims 1-7, 9-11, and 13-19 made in the final Office Action mailed by the Patent Office on April 4, 2003. Of the claims presently on appeal, claim 1 is independent, and claims 2-7, 9-11, 13-19 ultimately depend from claim 1. Appealed claims 1-7, 9-11, and 13-19 are set forth in the Appendix submitted herewith.

IV. STATUS OF AMENDMENTS

No amendment has been filed subsequent to the final Office Action mailed on April 4, 2003.

V. SUMMARY OF THE INVENTION

The present invention relates to a measuring system for measuring the viscosity of a liquid, which system includes a piezoelectric sensor device placed in the liquid to be measured, and which sensor device has electrical contact points for enabling electrical control. (Abstract). Inside the container, electric leads which are resistant to the corrosive effects of the liquid are provided, and the leads are connectable to an electronic control/analyzer unit outside the container and to the contact points of the sensor device by a suitable conductive adhesive containing metal particles. (Figure; p. 2, l. 7-11).

In contrast to known methods which utilize sealing devices to isolate the surfaces of the component to be brought into contact with a corrosive liquid, the measuring system according to the present invention has the advantage that there is no influence on the electric properties of the piezoelectric sensor device during the measuring operation caused by mechanical pressure applied to the sealing area in order to effect the seal (as in the known methods), and thus an accurate measurement of the viscosity of the liquid may be performed. (P. 1, l. 22-28; p. 2, l. 13-18). In addition, selecting suitable contact and lead wire materials and a suitable conductive adhesive guarantees complete immersion of the sensor device in the liquid to be measured, thereby further increasing the measuring accuracy. (P. 2, l. 18-21).

As shown in the Figure, the measuring system 1 includes a container 2 which is designed in two parts according to the present invention, including a bottom 20 and a cap 21 detachably mounted thereon, and it is immersed completely in liquid 10 to be measured. (P. 4, l. 13-16). Cap 21 has openings 4 for a liquid exchange situated on the side and/or at the top, the opening closer to the top may function as a liquid inlet, and the opening situated closer to the bottom may function as a liquid outlet. (P. 4, l. 16-20). Bottom 20 of the container 2 has two glass bushings 3. (P. 4, l. 20).

The entire measuring system 1 is situated in a liquid 10 whose viscosity or other liquid properties are to be measured, so the entire container 2 is thus also filled with liquid 10 through openings 4. (P. 4, l. 23-25). According to an exemplary embodiment, oil is used as liquid 10, however, other liquids in combination with suitable materials can also be measured. (P. 4, l. 27-29).

A sensor device 5, which may be a piezoelectric quartz crystal, for example, has a disk-shaped design and is completely immersed in liquid 10 in container 2. (P. 4, l. 31-33). Other piezoelectric materials such as lithium

tantalate piezoceramics or the like may also be used for the sensor device. (P. 2, l. 26-27). Disk-shaped quartz sensor 5 has two electric contact points 6 which are designed as gold or chromium electrodes 6 according to the present embodiment. (P. 4, l. 33-36).

Contact points 6 are connected by a suitable conductive adhesive 8 to electric lead conductors 7 which are designed as gold-plated or chromium-plated wires according to the present embodiment. (P. 5, l. 4-7). Electric lead conductors 7 may also be designed as bifurcated contact springs 7 for mechanical accommodation of the piezoelectric quartz disk 5. (P. 5, l. 9-11).

Conductive adhesive 8 guarantees the electric and mechanical contact of the piezoelectric quartz disk 5 with contact springs 7 at contact points 6. (P. 5, l. 13-15). According to the exemplary embodiment, isotropic, electrically conductive adhesive 8 advantageously is an epoxy resin, a phenolic resin and/or a polyimide. (P. 5, l. 15-18). The material of conductive adhesive 8 can also be based on an epoxy-phenol. (P. 5, l. 18-19). Isotropic conductive adhesives 8 are provided with metal particles, such as nickel and/or gold particles, in the form of flakes or beads or mixtures thereof. (P. 5, l. 19-21). The nickel and/or gold particles may have a particle size of approx. 2 μm to 20 μm, and the concentration of the nickel and/or gold particles in conductive adhesive 8 amounts to approx. 75 to 95 wt%. (P. 5, l. 22-25).

Electric lead conductors 7 may either pass directly through bottom 20 of container 2 through glass bushings 3 or be connected to corresponding connecting wires in bottom 20 of container 2 by suitable joining methods, e.g., welding. (P. 5, l. 27-30). The deciding factor is that an electric connection of sensor device 5 to an electronic control and analyzer unit outside of container 2 for electric control of sensor device 5 and subsequent analysis of the results is

established via contact points 6 and electric lead conductors 7, contact points 6, conductive adhesives 8 and electric lead conductors 7 being resistant with regard to liquid 10 to be measured. (P. 5, l. 30 - p. 6, l. 2).

A hermetic seal of the container may be provide without any negative effect on the electric connection of the sensor device to the external electronic control/analyzer unit. (P. 6, l. 14-17).

VI. ISSUE FOR REVIEW

The following issue is presented for review on appeal in this case:

A) Whether claims 1-7, 9-11 and 13-19 are unpatentable over the document Sensors and Actuators by Martin et al. ("the Martin reference") in view of United States Patent No. 6,479,763 to Igaki et al. ("the Igaki reference") and further in view of United Kingdom Patent No. 2,342,445 to Buchanan et al. ("the Buchanan reference").

VII. GROUPING OF CLAIMS

For the ground of rejection presented in this appeal, all claims will be treated as a single group.

VIII. ARGUMENTS

A. THE REJECTION OF CLAIMS 1-7, 9-11, AND 13-19

Claims 1-7, 9-11 and 13-19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the document Sensors and Actuators by Martin et al. ("the Martin reference") in view of United States Patent No. 6,479,763 to Igaki et al. ("the Igaki reference") and further in view of United Kingdom Patent No. 2,342,445 to Buchanan et al. ("the Buchanan reference"). Applicants respectfully submit that the rejection should be reversed for at least the following reasons.

In rejecting a claim under 35 U.S.C. § 103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984). If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie obvious*. In re Ratti, 270 F.2d 810, 123 USPQ 349 (C.C.P.A. 1959); M.P.E.P. §2143.01.

In support of the rejection, the Examiner contends that it would have been obvious to "use Igaki's conductive adhesive couplings in Martin to isolate the piezo element from shock and vibration." (4/4/03 Office Action, pp. 2-3). Furthermore, the Examiner contends that it would have been obvious to

modify the teachings of Martin with the teachings of Buchanan: "Specifically, Martin lacks a housing, Buchanan is relied upon to provide a housing for the Martin invention. Martin's transducer is completely immersed or it wouldn't work." (7/23/03 Advisory Action, p. 2). Applicants respectfully submit that the Examiner's contentions are generalized conclusions reflecting a subjective "obvious to try" standard, which is clearly insufficient to support an obviousness rejection, as unambiguously explained in cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), which make plain that the Office Action's generalized assertions that it would have been obvious to modify the reference teachings do not properly support a § 103 rejection. In particular, the Court in the case of In re Fine noted that:

> The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .
>
> **Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones noted that:

> Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .
>
> **Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].**

In re Jones, 21 U.S.P.Q.2d at 1943, 1944 (citations omitted; italics in original). It is respectfully submitted that the Examiner has offered no evidence whatsoever, but only conclusory hindsight, reconstruction and speculation, which the above-referenced cases have indicated does not constitute evidence that will support a proper obviousness finding.

More recently, the Federal Circuit in the case of In re Kotzab has made clear that even if a claim concerns a "technologically simple concept," there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed." The Court noted:

> In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed. . . . [W]e conclude that the Board did not make out a proper prima facie case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a).

In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000) (emphasis added). Again, it is believed that there have been no such findings by the Examiner in the present case.

Claim 1 recites:

> A system for measuring a property of a liquid, comprising:
> a immersible container having a cap, a bottom, an enclosed piezoelectric sensor device and at least one of a

liquid inlet and liquid outlet,

the immersible container being immersed in the liquid during a measurement of the property of the liquid,

the piezoelectric sensor device being completely immersed in the liquid during the measurement of the property of the liquid, the sensor including:

electric contact points for an electric control and which are resistant to the liquid;

electric lead conductors which are resistant to the liquid and which are connectable to a measuring unit outside the liquid; and

a suitable conductive adhesive containing metal particles and for coupling the electric lead conductors to the electric contact points.

In support of the rejection, the Examiner states that "Martin teaches the [claimed invention] except for the use of conductive adhesive coupling and an immersible container for mounting the crystal." (4/4/03 Office Action). The Examiner contends that it would have been obvious to "use Igaki's conductive adhesive couplings in Martin to isolate the piezo element from shock and vibration." However, this asserted motivation is simply not found in either Igaki or Martin, and there is no evidence that this motivation is found in the knowledge generally available to one of ordinary skill in the art. Regarding the Buchanan reference, it discloses using Piezo bars in a probe to measure the viscosity of a fluid. The Examiner cites the Buchanan reference for teaching an immersible container, and the Examiner concludes that it would have been obvious to "mount Martin's crystal in a protective container" (4/4/03 Office Action), and the Examiner specifically points out that Buchanan is being applied selectively for teaching a housing (7/23/03 Advisory Action). However, such selective application of specific portions of a reference is impermissible: the prior art reference must be considered in its entirety, i.e., ***as a whole, including portions that would lead away from the claimed invention***. See W. L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). In fact, the overall teachings of the Buchanan reference do not support the Examiner's contentions since the Buchanan

reference clearly teaches away from "the piezoelectric sensor device being **completely immersed** in the liquid during the measurement of the property of the liquid." Instead, according to the Buchanan reference, the Piezo bars are **not immersed in the liquid**. Specifically, the Buchanan reference discloses:

> The operating and operated Piezo bars, their connecting arms, driver and driven discs are preferably housed in a cylindrical housing with aperture means on the base and further side aperture means on the side of the probe at a point above the driver and driven discs, whereby when the probe is immersed, generally upright, in the fluid to be tested to a level above the side aperture means the driver and driven discs are fully immersed in the fluid to be tested. **At a point above the operating and operated Piezo bars the probe is sealed by a plug enabling air to be trapped above the size aperture means, the operating and operated Piezo bars are situated within this gap above the side aperture means the second housing.** The driver and driven discs are immersed in the test fluid below the side aperture means the first housing. **The test fluid can timeously flow into the probe through the base aperture means, air being displaced through the side aperture means allowing fluid to rise within the probe to approximately the level of the top of the side aperture means**. (Buchanan, p. 2, ll. 1-15; *emphasis added*).

Thus, the ***overall*** teachings of the Buchanan reference clearly do not suggest the modification asserted by the Examiner: the Buchanan reference teaches a system in which the ***Piezo sensor is not to be immersed in the liquid*** to be tested. Since the principle operation of the measurement device disclosed in the Martin reference requires the Piezo sensor to be immersed in the liquid being measured, the Buchanan reference clearly teaches away from the suggested combination with the Martin reference, thereby defeating the obviousness conclusion. In the alternative, combining the overall teachings of the Buchanan reference (in which the piezo bars are not immersed in the liquid) with the overall teachings of the Martin reference would yield a non-functioning viscosity measurement device, as implicitly acknowledged by the Examiner: "Martin's transducer is completely immersed or it wouldn't work." (7/23/03

Advisory Action, p. 2). Since the overall teachings of the Martin reference clearly contradict the overall teachings of the Buchanan reference, and since the proposed modification of the Martin reference with the teachings of the Buchanan reference would render the viscosity measurement device disclosed in the Martin reference unsatisfactory for its intended purpose, there is no suggestion or motivation to make the proposed modification, as a matter of law. See In re Gordon, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984).

For the foregoing reasons, the combination of the Martin reference, the Igaki reference, and the Buchanan reference does not render Claim 1 and its dependent Claims 2-7, 9-11, and 13-19 obvious under 35 U.S.C. §103.

IX. CONCLUSION

For the foregoing reasons, it is respectfully submitted that the final rejection of claims 1-7, 9-11 and 13-19 should be reversed.

Respectfully submitted,

KENYON & KENYON

Dated: 1/6, 2004

By: _____
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CUSTOMER NO. 26646
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[10191/2310]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
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Applicants	:	Bernhard JAKOBY et al.
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Signature: _____
Jong H. Lee

APPELLANTS' APPEAL BRIEF
UNDER 37 C.F.R. § 1.192

S I R :

Applicants filed a Notice of Appeal dated October 6, 2003 (filed at the PTO on October 8, 2003) appealing from the Final Office Action dated April 4, 2003, in which claims 1-7, 9-11 and 13-19 of the above-identified application were finally rejected. This Brief is submitted by Applicants in support of their appeal.

I. REAL PARTY IN INTEREST

The above-identified Applicants and Robert Bosch GmbH of Stuttgart,

the immersible container being immersed in the liquid during a measurement of the property of the liquid,

the piezoelectric sensor device being completely immersed in the liquid during the measurement of the property of the liquid, the sensor including:

electric contact points for an electric control and which are resistant to the liquid;

electric lead conductors which are resistant to the liquid and which are connectable to a measuring unit outside the liquid; and

a suitable conductive adhesive containing metal particles and for coupling the electric lead conductors to the electric contact points.

2. The system of claim 1, wherein viscosity is the property of the liquid that is measured.

3. The system of claim 1, wherein the piezoelectric sensor device is configured as a disk-shaped quartz crystal and is excitable to shearing oscillations by the electric control.

4. The system of claim 1,wherein the liquid to be measured is an oil.

5. The system of claim 1, wherein the electric contact points are one of gold and chromium electrodes.

6. The system of claim 1, wherein the electric lead conductors are one of

gold-plated wires and chromium-plated wires.

7. The system of claim 1, wherein the electric lead conductors are configured as bifurcated contact springs.

9. The system of claim 1, further comprising:

bushings situated in at least one of the cap and the bottom of the protective container, wherein the electric lead conductors are led through the protective container through the bushings.

10. The system of claim 9, wherein the bushings are made of glass.

11. The system of claim 1, further comprising:

connecting leads in at least one of the cap and the bottom of the protective container, wherein the electric lead conductors are connectable to the connecting leads.

13. The system of claim 1, wherein the at least one opening is situated in the cap of the protective container.

14. The system of claim 1, wherein the protective container is hermetically sealable.

15. The system of claim 1, wherein the conductive adhesive is an isotropic,

electrically conductive adhesive including at least one of an epoxy resin, a phenolic resin, and a polyimide.

16. The system of claim 1, wherein the conductive adhesive is an isotropic, electrically conductive adhesive including an epoxy-phenol.

17. The system of claim 1, wherein the metal particles in the conductive adhesive are at least one of nickel particles and gold particles.

18. The system of claim 17, wherein the at least one of nickel particles and gold particles have a particle size of approximately 2 μm to 20 μm.

19. The system according to claims 17, wherein the at least one of nickel particles and gold particles are provided in the conductive adhesive in a concentration of 75 to 95 wt %.

Respectfully submitted,

KENYON & KENYON

Dated: 1/6, 2004

By: for Richard L. Mayer (by)
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